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point for the heated liquid depicted by directional arrows 124. As a result, as the cooled liquid 128 is heated it becomes lighter and rises in the heat transfer system 106. This creates liquid movement, liquid momentum, and liquid circulation (i.e., convective liquid circulation) in the liquid cooling system.

[0086] (Currently amended) Fig. 2 displays a sectional view of a heat exchange system implemented in accordance with the teachings of the present invention. Fig. 2 displays a sectional view of heat exchange system 112 having no reservoir along section line 140 shown in Fig. 1. A cross section of the motor 114 is shown. The motor 114 is positioned above heat exchange system 112; however, the motor 114 may be positioned on the sides or on the bottom of heat exchange system 112. Further, heat exchange system 112 may be deployed without the motor 114 and derive power from another location in the system.

[0087] (Currently amended) Heat exchange system 112 includes an input cavity 200, a heat dissipater 210, and an output cavity 212. In one embodiment, the motor 114 is connected through a shaft 202 to an impeller 216, disposed in an impeller case 214. In one embodiment, the input cavity 200 is connected to the conduit 108B. In another embodiment, an impeller case 214, an impeller casing input 220, and an impeller exhaust 218 are positioned within the output cavity 212. The impeller exhaust 218 is connected to the conduit 118B. Further, in one embodiment, liquid tubes 208 run through the length of the heat dissipater 210 and transport liquid from the input cavity 200 to the output cavity 212. In yet another embodiment, heat exchange system 112 may be fitted with a snap-in unit for easy connection as a single unit within or to housing or case 100 of Fig. 1. In all of the above embodiments, there is no reservoir employed or used in the cooling system.

A.B.
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~~[0101] (Previously presented) Coolant ~~cavity~~ reservoir 314 receives and stores cooled liquid 320 from conduit 328. Cooled liquid 320 is a non-corrosive, low-toxicity liquid, resilient and resistant to chemical breakdown after repeated usage while providing efficient heat transfer and protection against corrosion. Depending upon particular cost and design criteria, a number of~~

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gases and liquids may be utilized in accordance with the present invention (e.g., propylene glycol). Coolant ~~cavity~~ reservoir 314 is a sealed structure appropriately adapted to house conduits 328 and 308. Coolant ~~cavity~~ reservoir 314 is also adapted to house a pump assembly 316. Pump assembly 316 may comprise a pump motor 312 disposed upon an upper surface of coolant ~~cavity~~ reservoir 314 and an impeller assembly 324 which extends from the pump motor 312 to the bottom portion of coolant ~~cavity~~ reservoir 314 and into cooled liquid 320 stored therein. The portion of delivery conduit 308 within coolant ~~cavity~~ reservoir 314 and pump assembly 316 are adapted to pump cooled liquid 320 from coolant 314 ~~cavity~~ reservoir into and along conduit 308. In one embodiment, pump assembly 316 includes a motor 312, a shaft 322 and an impeller 324. Conduit 308 may be directly coupled to pump assembly 316 to satisfy this relationship or conduit 308 may be disposed proximal to impeller assembly 324 such that the desired pumping is effected.

[0101]

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~~[0109]~~ (Currently amended) In an embodiment, ~~liquid~~ cooling system 300 represents an application of the present invention in larger data processing systems, such as personal computers or server equipment. Heat exchange system 310 comprises a coolant ~~cavity~~ reservoir 314 and a heat exchange system 330 coupled together by liquid conduit 328. Liquid cooling system 300 further comprises conduit 308, which couples coolant ~~cavity~~ reservoir 314 to transfer system 304. Liquid cooling system 300 further comprises conduit 306, which couples heat exchange system 310 to the heat transfer system 304. Conduit 308 transports cooled liquid 320 from coolant ~~cavity~~ reservoir 314 to the heat transfer system 304. Liquid conduit 306 receives and transfers heated liquid from the heat transfer system 304 to heat exchange system 310. Conduit 328 transports cooled liquid from heat exchange system 330 back to coolant ~~cavity~~ reservoir 314. Conduits 306, 308, and 328 may comprise a number of suitable rigid, semi-rigid, or flexible materials (e.g., copper tubing, metallic flex tubing, or plastic tubing) depending upon desired cost and performance characteristics. Conduits 306, 308, and 328 may be inter-coupled or joined with other system components using any appropriate permanent or temporary contrivances (e.g., such as soldering, adhesives, or mechanical clamps).